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THE NEW SUBWAY IN MANHATTAN

BY · H · C · BROWN

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By H. C. BROWN

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New York

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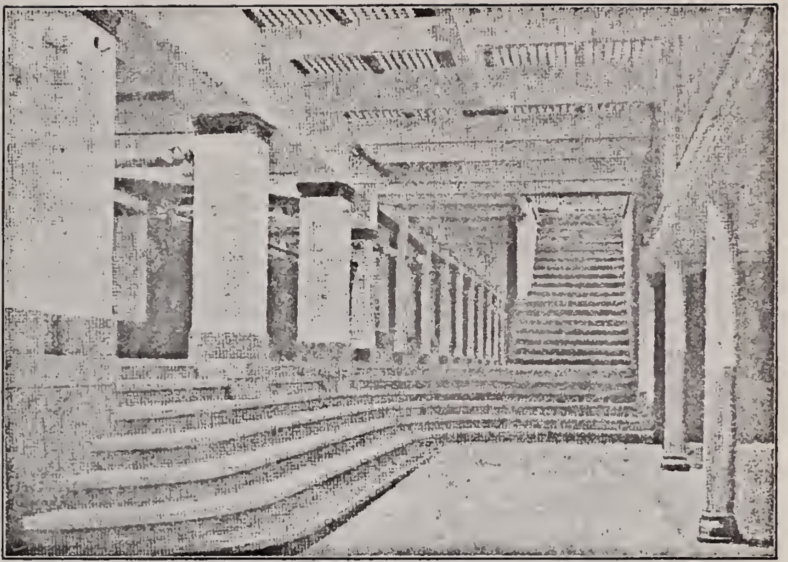
DRILLING AND BLASTING FOR THE RAPID TRANSIT

THE NEW SUBWAY

IN the archives of the ancient city of The Hague in Holland may still be seen a letter of deep interest to all New Yorkers. It was written by Mr. P. Schaghen on March 5, 1625, and announced to the members of the Dutch West India Co. the fact that a ship had arrived the day before bringing news of the company's expedition to America. Referring to the success of the venture, the letter concludes: "They have bought the island of Manhattan from the wild men for the value of sixty guilders." The new settlement was called New Amsterdam.

We shall not attempt in the limited space at our command to dwell further on the early history of Manhattan. Its population



FORTY-SECOND STREET STATION NEW SUBWAY

Some idea of how fast passenger traffic grows in New York may be gained from the following figures:

1872	All lines, surface and elevated,	138,867,000
1882	" " "	252,800,000
1892	" " "	453,200,000
1899	(Transfers included)	687,789,259

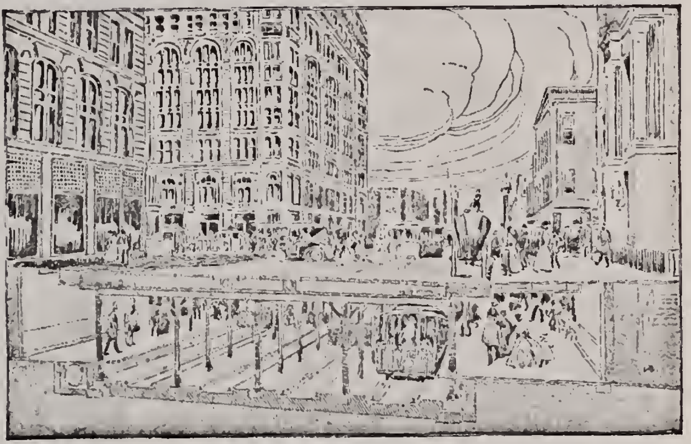
All the steam railways in the United States, from the Atlantic to the Pacific, from the St. Lawrence to the Rio Grande, do not carry as many passengers by over 5% as are moved in New York City alone.

That is the problem covering a volume of urban travel unparalleled as to quantity in any city in the world, and increasing at an astonishing ratio which the new subway is expected to solve.

The city has always been deeply interested in transit apparently. Even before the need of local transportation made itself felt, New York had busied itself with the problem of connection with the

this country, they were introduced into Europe by the late George Francis Train. So that no matter where you roam—in Europe, Asia, Africa or Japan—wherever you see a horse-car or a tram-way, you can always feel proud to know that little old New York invented the system and inaugurated the first successful street car line in the world.

And in the development of the cars themselves New York has always kept in the lead. Not many years ago there was no heat provided in winter; the floors were strewn with straw in lieu of stoves, which would be deposited in the street at irregular intervals by departing passengers, and in summer the cars were stifling hot, the windows being stationary. Soon the straw disappeared and small heaters took its place. The superheated conveyances gave way in summer to the popular open car. In other respects also the comfort of passengers was consulted. Straps were provided for those who had to stand, and the size of the cars was enlarged.



TWENTY-THIRD STREET STATION

But the greatest advance came with the advent of traction power in place of horses. The sufferings of the latter were at times enough to cause the most careless onlooker a moment's uneasiness, and New

TYPE OF STEEL COACH IN NEW SUBWAY

To those who enter the new subway at the City Hall, travel on a train made of steel, in a tunnel light as day, wholly free from dust, ashes, smoke and smell, cooler in summer and warmer in winter than the street, the contrast with the mode of transit in Stephenson's day will be marked. The difference in time will also be amazing. What was formerly almost a half-day's journey will be completed in fifteen minutes.

But much had to be done before the subway was even possible. The lumbering stage coaches had to be replaced with the improved rail line affair. This in time had to give way to the half-forgotten bob-tail one-horse car, where the fare was three cents, which you dropped in a box yourself (for there was no conductor to receive it). This was superseded by the larger and more commodious two-horse car, which rejoiced also in the dignity of a conductor, whose sole duty it was to look after the welfare of passengers and collect fares. This was luxury, indeed, and further improvement was deemed impossible.

Yet it came. But before the elevated, the cable, the trolley and the underground traction, which were the next progressive steps, some innovations were tried, which, though at the time unsuccessful, were eventually proven to be correct in principle.

Charles C. Harvey essayed an elevated road in Greenwich street, from the Battery to 29th street. He used as a propelling power a wire rope drawn by a stationary engine. This was a failure, and not till small steam locomotives were tried did overhead travel

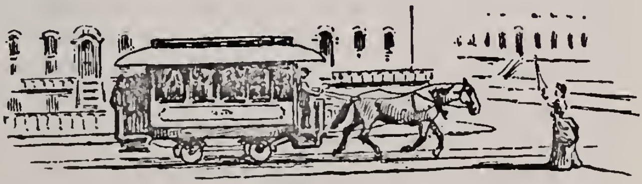
damage would have been done to the whole idea of underground transit had their plans been adopted.

But the need for greater transit facilities continued even after the opening of the elevated and the substitution of street cars for stages on Broadway. Horses were soon displaced by cables operated by steam, and cables in turn by electrically controlled trolley, both overhead and underground (as in Madison avenue and other New York City lines); yet still the cry was for more. The strap-hangers could not be dispensed with. They were present at all hours and on every line. Such was the situation when ground was broken for the latest and best system of transit—New York's great underground Rapid Transit.

EXCAVATING FOR THE SUBWAY

between the receipt of Mayor Hewitt's message and the ceremony of breaking ground, which was conducted with much pomp and circumstance by Mayor Van Wyck on the 24th of March, 1900, in City Hall Park, whose first shovelful started the actual work on the subway.

The financial question was the first rock which the subway ship encountered. It lay there stranded for a while. Private capital could not be interested, and the restrictions in the Constitution of the State rendered aid in that direction impossible. In order to appreciate the difficulties encountered at the beginning of the project, it is necessary to read Mayor Hewitt's message to the Common Council, describing what was necessary in order to get this great work started. "It was evident," said he, "that underground rapid transit could not be secured by the investment of private capital, but in some way or other its construction was dependent upon the use of the credit of the City of New York. It was also apparent that if such credit were used, the property must belong to the city. Inasmuch as it would not be safe for the city to undertake the construction itself, the intervention of a contracting company appeared to be indispensable. To secure the city against loss, this company must necessarily be required to give a sufficient bond for the completion of the work and be willing to enter into a contract for its continued operation under a rental which would pay the interest upon the bonds issued by the city for the construction, and provide a sinking fund sufficient for the payment of the bonds at or before maturity. It also seemed to be indispensable that the leasing company should invest in the rolling stock and in the real estate required for its power houses



THE "BOBTAIL" STREET CAR FORTY YEARS AGO

corporation. The voters overwhelmingly decided in favor of owning this great enterprise themselves.

Naturally this provision in the bill did not suit the moneyed men who first consented to back the subway.

Nevertheless, private capital was eventually found for the enterprise, and New York owes much to the intrepidity and courage of August Belmont, the financier of the subway.

The finding of a contractor able and willing to assume all the dangers and difficulties of the work was a more serious matter. Among all the engineers of the world but two men came forward—John B. McDonald and Andrew Onderdonk. The former bid thirty-five millions flat—the exact estimate of the Chief Engineer, Wm. Barclay Parsons—and Mr. Onderdonk, nearly forty millions, with some extras in the shape of rentals.

Mr. McDonald came into prominence by his success in building the splendid tunnel for the B. & O. Railroad under the city and bay of Baltimore, which proved conclusively his right to be at the head of so important a work as New York's Subway.

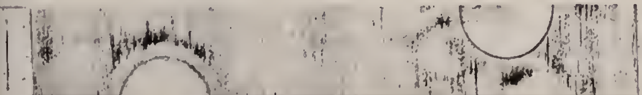
As finally awarded, Mr. McDonald agreed to build and equip the road, furnish the rolling stock, and turn over everything ready to the Interborough Rapid Transit Co. (the operating company), for the sum of thirty-five million dollars.

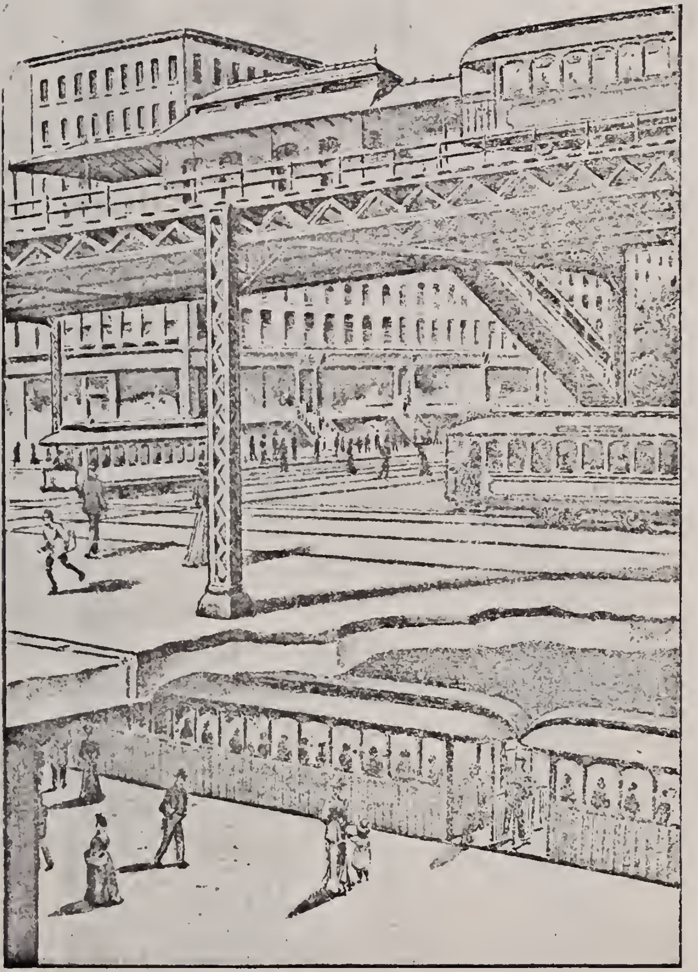
In addition to this, Mr. McDonald is given a lease of the road for fifty years, with an option for another twenty-five years, at a rental price to be fixed upon by agreement or arbitration. At the termination of the final lease, the city agrees to buy the road and equipment at a price to be settled either by agreement or arbitration.

In the meantime, Mr. McDonald for his fifty-year lease pays a rental equal to the interest payable by the city on the bonds issued for construction and also one per cent. upon the whole amount of such bonds, except that for the first five years the payment is not to be made unless the profits of the road amount to 5% per annum; and for the next five years the payment is to be only half of one per cent. unless the profits of operation amount to 5%.

The motive power is to be electricity, but is to be changed if

the earth, as in the case of ordinary tunnels, the excavation was made by cutting direct from the street. Into this cut is built the structure, consisting almost wholly of concrete foundations and steel columns between which spring the arches, the use of heavy masonry being almost done away with. This method of construction in so great an undertaking was never tried before, and is only one instance of the courage and originality of the clever engineers in charge of the work. They had new problems to solve and never hesitated to adopt new methods the moment results justified them. Consequently we have a light, graceful construction, yet of wonderful strength, instead of the heavy, massive stones and girders of the past. Masonry is used only where the steel columns rest upon stone pedestals laid upon the floor.





WHERE ELEVATED, SURFACE AND SUBWAY COME TOGETHER, SIXTH AVENUE AND FORTY-SECOND STREET

TIME TABLE OF THE NEW SUBWAY, FROM CITY HALL TO 145th STREET.

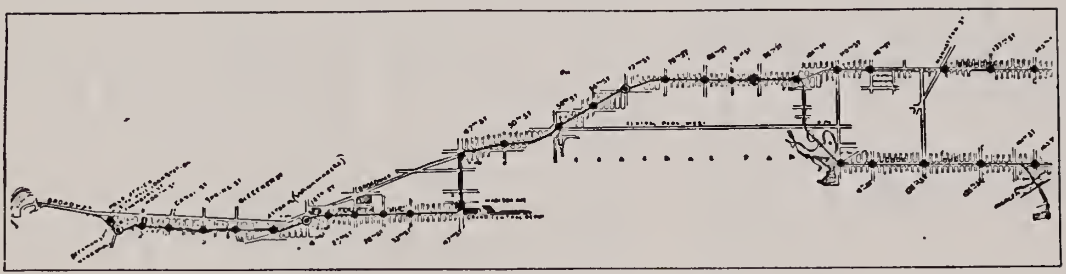
(The portion at present completed.)

EXPRESS STATIONS

STATIONS	RUNNING TIME MINUTES
Brooklyn Bridge (start)	—
14th street	4
42nd street	8
72nd street	13
96th street	16
103d street	17½
110th street	19
116th street	20
Manhattan street	22½
137th street	24½
145th street	26

LOCAL STATIONS

City Hall loop
Brooklyn Bridge
Worth street
'anal street
Spring street
Bleecker street
Astor Place (Wanamaker's)
14th street
18th street
23rd street
28th street
33rd street
42nd street (Grand Central)
42nd street (Broadway)
50th street
60th street
66th street
72nd street
79th street
86th street
91st street
96th street
103rd street
110th street
116th street
Manhattan street
137th street
145th stree



ROUTE AND SCHEDULE OF THE NEW SUBWAY.

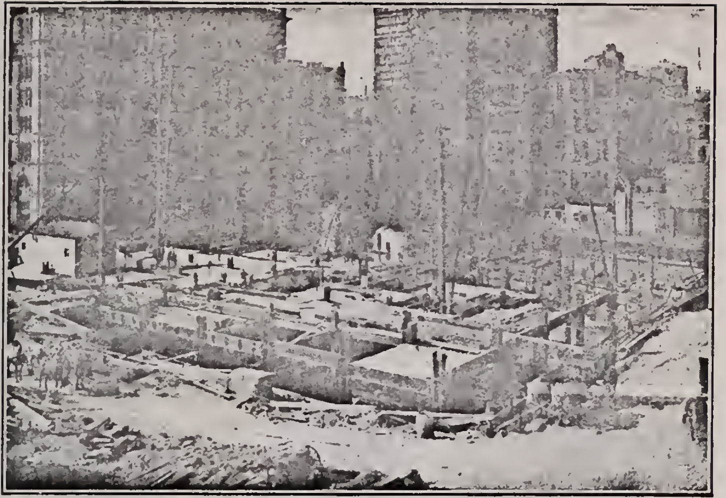
Possibly a passenger has an engagement for the evening, and has left his office late, his mind full of some project. Suddenly he recalls with a start that he will need a shave. Then he sinks back in his seat with a sense of composure, for he recalls that at a certain station he can leave the train, step into a barber shop and "be singed" in any way and to any extent he elects. Already one barber shop has been connected with the Subway.

To the shopper this feature of the Subway will be a boon, indeed. It will be possible for a woman to start from any part of the United States without an umbrella, spend her husband's income many times over and return home without once exposing her hat to the weather. Doubtless in course of time theatres and churches, as well as hotels and drygoods stores, will be connected with the underground railroad.

Advertisements are to be placed in the handsome tiled stations and the cars. The character of the stations suggests that the railroad company might, to the advantage of the public, appoint a censor of advertisements who would perform for the stations the same duty which the editors of some magazines do for their advertising pages. The stations are so handsome that the advertising posters ought to be ornamental and in keeping with their surroundings. There are also to be newspaper stands in the subway stations.

The motive power is electricity supplied by an enormous power house located at Eleventh avenue, 58th and 59th streets. These buildings alone are worth a page of description, but space forbids. Some idea of their immensity may be formed from their dimensions—200 x 694. They are 125 feet high. For a strictly business building it is quite attractive looking, and is certain to become a landmark of the city. It has six enormous smokestacks 162 feet high, measuring 15 feet in diameter at the top. Water is taken directly from the river. The coal bunkers have a storing capacity of 18,000 tons. The total amount of horse power generated when everything is going will be close to 130,000.

For the conversion of the high tension electric power sent out

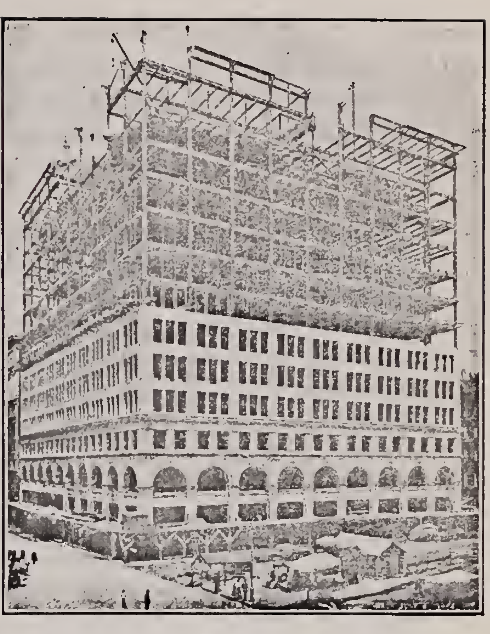


AS IT APPEARED A MONTH AFTER GROUND WAS BROKEN

not so wide, are comfortably spacious, and form a connection between the two basements only.

It is now about nine years since this concern recognized the truth, which is now so self-evident, that Astor Place is the transit centre of New York. Wanamaker's has become the tremendous success it has largely because all roads lead to Wanamaker's, and the best of the world's produce is to be found at Wanamaker's.

To-day more than ever before the map of New York shows Wanamaker's right in the centre of the web. There is no other point in New York City where so many great lines of transit converge and come together. On the Broadway side, pass the surface cars up and down Broadway, Columbus Avenue and Lexington Avenue. On the Fourth Avenue side are the Madison Avenue cars. At the corner of the new Wanamaker's, at Astor Place, are the Second Avenue cars. A few steps away are the Third Avenue surface and elevated cars. Passing along Eighth Street are the cars from East Tenth Street and Christopher Street Ferries. The new subway has a station in the Wanamaker basement. Cars from the



TEN MONTHS LATER

wonder that such an enormous investment should be made in retail building at Astor Place. And that wonder has ceased largely because of the realization of the fact we recognized years ago, that Astor Place is and must continue to be the transit centre of New York.

Ground was broken for this new edifice on September 2, 1903. Notwithstanding the labor troubles and the incidents to delay a huge undertaking of this kind, the work has progressed steadily and with extraordinary rapidity. In the several photographs shown elsewhere in these pages we have thought it of sufficient interest to show the different stages which illustrate the rapidity with which a modern steel structure under favorable auspices can be erected.

In a building of such magnitude as this, the enormous distances traversed must be considered in order to minimize them as much as possible, and make shopping, not only comfortable, but pleasurable as well. It is for this reason that so much time and thought have been expended on the location of the elevators in order that every access may be had to all parts of the building with the least possible effort.

In the interior of the building another innovation which will

driveway, which is on the Eighth Street side. This is an area of 4,000 square feet, and is arranged to receive the delivery wagons, and which connects directly with the elevators. A vast saving of time is thus accomplished, although at an expenditure of an enormous amount of space.

Another feature of more than usual interest, both from a decorative and practical standpoint, will be the rotunda, or court, in the centre of the building, which is built of cream color enameled terra cotta, with a skylight of polished glass and ornamental iron ribs. This court will be 112 feet high, and provides the inestimable value of light in all floors. Architecturally, it adds much to the interest of the building, although, again, this meant the sacrifice of a large amount of space, which was unhesitatingly devoted to this purpose.

But perhaps the feature which will most interest New Yorkers is the new station of the Rapid Transit Subway, directly on a level with the basement floor. Six elevators will be conveniently placed near the entrance from the subway to convey passengers immediately to the floor which they desire to visit in the building. Two direct entrances will also connect the station with the store. Although this undertaking was fraught with many difficulties and very great expense, the convenience of being able to step immediately from the train into the store is one that will be much appreciated by the public.

The Wanamaker Store in New York will be the largest by long odds of any in America—to say nothing of the magnificent new building now in course of erection for the Wanamaker Store in Philadelphia.

This enormous growth, in two great American cities, is simply public testimony to its approval of Wanamaker merchandizing, and the high quality of the public service rendered.

All the power and skill of this great institution is at *your* service.

The World comes to Wanamaker's when it visits the Metropolis. The World writes to Wanamaker's when it has mer-

chandise needs and cannot come—and it writes from Texas, Alaska, China, the Philippines, South Carolina, or wherever it happens to abide. And it gets the best and promptest service that the skill of man has devised for the distribution of the world's products.

* * *

A few doors above Wanamaker's and Daniell's is the famous

ST. DENIS HOTEL

at Broadway and 11th Street, particularly suited for luncheon and dinner.

EUROPEAN PLAN

Breakfast and dinner both table d'hôte and à la carte.

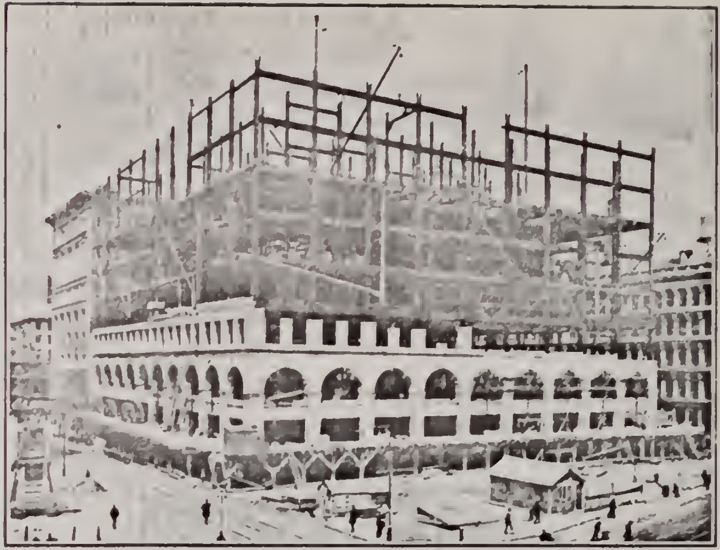
Single Rooms, $1.50 and upwards Rooms with Bath, $3.50 and upwards
Double Rooms, 2.00 and upwards For Two Persons

WM. TAYLOR & SON

excite particular interest, will be a music hall, which is located on the second story, but extends through the third and fourth stories, giving a height in the clear of over forty feet. There are no columns or obstructions within this hall excepting slender pillars, which support a balcony at the third floor level. This hall will be renowned for the beauty of its mural decorations, will be equipped with the necessary dressing-rooms, a magnificent pipe organ, and will combine all the advantages of a theatre and concert hall with none of their drawbacks. It has a seating capacity of nearly 1,500, and special provision has been made for the comfort of children.

FROM PHOTO TAKEN OCTOBER 10, '04

Another original feature of the building which contributes to the smoothness of the operating department is the concourse, or



SIX MONTHS LATER

Brooklyn Bridge come past the door. The Williamsburg Bridge is nearer still. The Fourteenth Street cars are only a step away. The Grand Central Station is a twelve-minute ride. All these are reached without transfers.

There is no other spot on Manhattan Island that compares for a moment with Astor Place and Wanamaker's for accessibility.

The great building that now faces Astor Place, and that can be seen from river and bridge, and from uptown and downtown, has been built here because the great metropolitan public can most easily reach this central spot.

And in a few more months both of these buildings, the fine, old store built by A. T. Stewart and the new steel structure conforming to the most modern ideas, will together combine the largest and most aggressive retail institution in the country and in the world.

The public that eight years ago marveled at the attempt to revive what was thought to be a dead retail centre has ceased to

from this main power house to low tension power for distribution on the third rail there are eight sub-stations along the line where the change is effected. There can be no breakdown or stoppage from any accident to the power house, as each motor has its independent engine and boiler. Nothing short of a complete breakdown all over the building at once would create this situation—a contingency not likely to occur.

While the road is called a tunnel, it is so in name only. We have not the space to enumerate here all the marvelous engineering triumphs which were achieved in order that New Yorkers need not travel in the bowels of the earth. To a very great extent natural daylight will permeate the Underground; the only artificial light will be that of electricity. There will be no locomotives to fill the tunnel with smoke and cinders, the cars being operated entirely by electric power.

The engineering staff of the Board of Rapid Transit was close upon four hundred men, including seventy-three engineers and 126 inspectors. This staff was from the beginning under the supervision and control of the chief engineer of the Board, William Barclay Parsons, who deserves much of the credit for bringing to its full fruition in its concrete form the New York Subway.

The photos showing the interesting excavation scenes are kindly loaned by the Rand Drill Co., and stations by courtesy of the *Evening Sun.*

THE NEW WANAMAKER BUILDING

The new Wanamaker building, which occupies the entire block bounded by Broadway, Fourth Avenue, Eighth and Ninth Streets, while a separate structure, is in reality merely an extension and enlargement of the older building, directly opposite. Every facility has been provided for a quick and pleasant passage from the old structure to the new; three handsome subways of white enameled brick will connect the two. They will be brilliantly lighted with incandescent lamps. One of these passageways alone is 35 feet wide and connects with the sub-basement as well as the basement of the new building. The others, while

Soon after the Subway is in operation its patrons will discover when they descend to the ornate stations that the street shop has followed them. At some of the stations they will find themselves passing along arcades lined with underground shops on each side. Of the buildings which will probably be connected directly with the Subway or for which such a connection has already been made are the new Trinity Building at 111 Broadway, the Equitable Building at 120 Broadway, Wanamaker's new store at Astor Place, the new Mercantile and Metropolitan Life buildings at Twenty-third street, and the Hotel Belmont at Forty-second street.

SHOWING HOW THE STREETS WERE TORN UP IN SOME PLACES FOR NEARLY TWO YEARS

The possibilities of a chain of shops along the Subway are interesting.

double standard track is again resumed, and continues to the Harlem River, under which it passes in a double cast iron tube 16 feet in diameter.

Beyond the Harlem the two-track line reappears, and is continued up to Melrose avenue, where the trains emerge once more to the surface and are carried from that point to the Bronx on an elevated structure.

The West Side line continues from 104th to 116th street as a three-track line of standard steel and concrete, At this juncture, however, the road being cut in solid rock, it was found quite possible to do away with steel and use only a solid arch of concrete. This is one of the few instances where a single arch is used in an open cut, and is a notable piece of engineering. It is about 42 feet span, and is said to be one of the finest examples of this kind of work ever constructed.

Shortly after leaving 116th street a deep depression occurs, and the train runs out into the open across an elevated viaduct over Manhattan Valley, to reenter the earth again at 133d street. Between 137th and 145th streets a large underground storage yard has been provided, with five extra tracks. Rent underground is considerably cheaper, you see, than the streets, and what would have otherwise cost the city a king's ransom in money is thus acquired for practically the cost of excavation.

At 167th street and at 181st street the Subway is very, very far down—so far that elevators have to be provided, the same as at the Elevated station at 116th street. That is the only place where the subway really gets a chance to justify its title. Beyond Dyckman street the road finally emerges from the ground, and continues its journey to the end on elevated tracks to Kingsbridge.

In the construction of the cars for the Subway due attention has been paid to the lessons taught by the disaster in the Park avenue tunnel and the destruction by fire of the train in the Paris underground. As a result the new cars are fitted with anti-telescopic steel platforms and are absolutely fire proof.

The steel used in the structure will be close upon 75,000 tons; the cast iron nearly, if not beyond, the weight of 10,000 tons.

The concrete a half million cubic yards; the brick more than 20,000 cubic yards.

The waterproofing alone is upward of three-quarters of a million cubic yards.

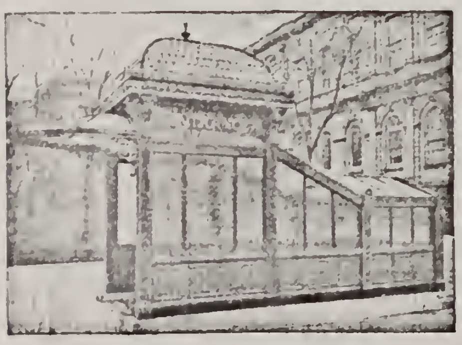
Some 7,000 vault lights, each of many feet of area, have been put in place.

The total length of track approaches upon 350,000 feet, of which over 290,000 are underground, the balance being elevated.

THE ROUTE OF THE RAPID TRANSIT

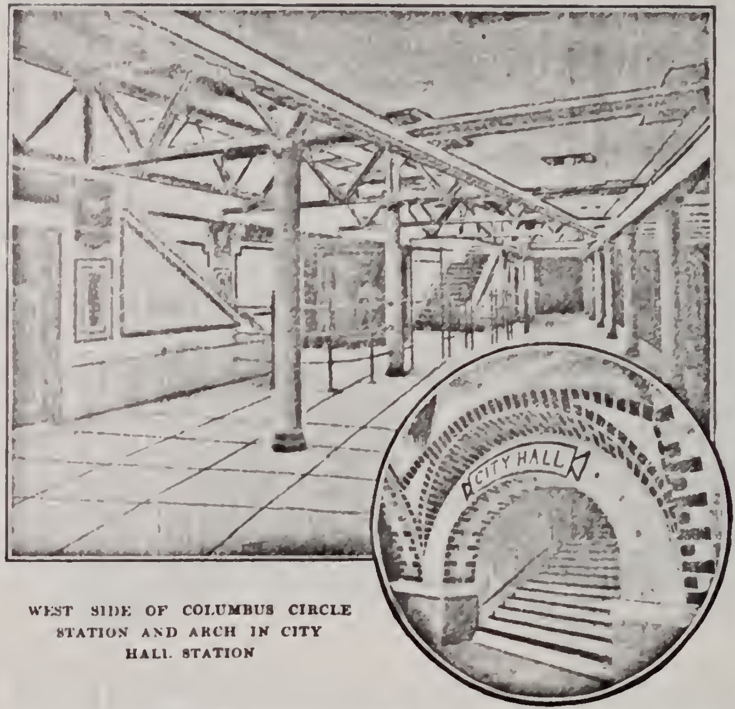
The road at present begins at City Hall and ends at the city limits at Kingsbridge—a distance of thirteen miles. Numerous applications have been made for extensions of the system since the original route was sanctioned by the Court of Appeals, and many additions have been authorized.

From the City Hall up to 33d street the structure is four tracks. Above this it splits into two double-track tunnels, which pass each side of the Park avenue tunnel between 33d and 41st streets. At 42d street these two tunnels come together again in a four-track line as before, which continues along 42d street to Broadway and then up Broadway to 104th street.



STATION ENTRANCE TO SUBWAY

At 104th street it forks off into an East Side and a West Side line. The two middle tracks at this point pass underneath the east track and, turning sharply to the right, pass into a tunnel under 104th street (similar to the one at 33d street) through Central Park. The east portal of this tunnel is at Lenox avenue, where the



WEST SIDE OF COLUMBUS CIRCLE STATION AND ARCH IN CITY HALL STATION

and other buildings an amount of money sufficiently large to indemnify the city against loss in case the lessees should fail in their undertaking to build and operate the railroad."

This message, subsequently introduced into the Legislature, in the form of a bill, was adversely reported, and for nearly five years the project slumbered. The need for transportation, however, never relaxed for an instant, and finally an act was passed creating a rapid transit commission along the lines suggested by Mr. Hewitt, and once more the work on New York's great Underground was resumed.

The bill as finally passed by the Legislature gave the franchise in perpetuity to the corporation who would build the subway. This bill was subsequently amended by a clause providing for a referendum vote, by which the people of the city should say whether it would be owned and controlled by them instead of a private

AN UPTOWN STATION IN THE SUBWAY

THE NEW YORK UNDERGROUND

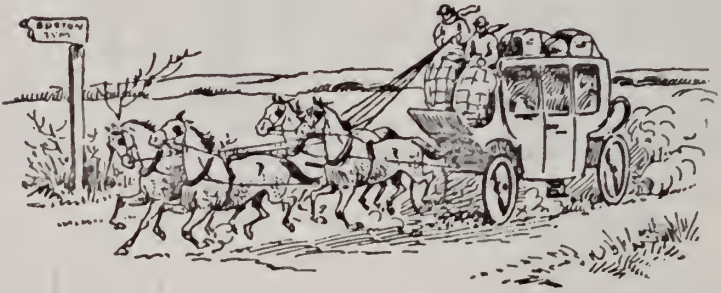
HOW IT WAS BUILT AND THE MEN WHO BUILT IT

The apparent failure of the first tunnel scheme seemed to have put an end to that form of transit. But the streets were already overcrowded and the necessity for some such undertaking became daily more pressing. In January, 1888, Hon. Abram S. Hewitt, then Mayor of the city, revived interest in the plan by a message practically outlining the scheme under which the present subway became a fact. To its other great debts to this distinguished citizen of New York must also be added the underground system now so successfully inaugurated.

Even after the project took definite form so far as the Legislature and other law-making bodies were concerned, there were still endless difficulties to overcome, and a trying delay for the citizens of New York ensued. Nearly twelve years elapsed

show its merits. The Greenwich street line was quickly supplemented by additional routes on Sixth, Third and Second avenues, with extensions, and the Elevated of New York started a career of usefulness which has continued to this day. Its service has lately been much enhanced by a change of motive power from steam to electricity.

Almost coincident with the first elevated came also the first underground. An enterprising citizen constructed a tunnel on Broadway from Park place to Warren street. He ran trains in it, but somehow or other the project failed to commend itself to capitalists, and the tunnel languished. It finally degenerated into a storage cellar for a wine house. "To such base uses may we come, Horatio!"



OLD-TIME STAGE COACH

In the light of the development of modern engineering, it is now seen that it was a wise provision that ordained the failure of the first underground railway. Had it succeeded and had the city been committed to the work, there is no doubt that it would have been a matter of lasting regret. We would have been condemned to travel in absolute darkness, the air filled with noxious gases, and fatalities would have been frequent. No matter what ability might have been shown in building and planning this tunnel, the right conditions did not exist at that time for a system such as we now have. The inventors were just a little ahead of their era, and irreparable

Yorkers breathed a sigh of relief when the new and eminently humane motive power was finally an accomplished fact.

Relief to the horses brought also relief to the drivers. Most of the cars now provide a covered platform for the motor man, protecting him from the icy blasts of winter, and the strain of his work in hot weather is greatly reduced.

In the new subway still further improvements in rolling stock have been achieved. Not only are the cars more numerous, but they are also of vastly superior construction. All of them are built with metal lining, making them absolutely non-collapsible, and a great number are built entirely of steel. A peculiar feature is the floor construction, consisting of steel girders running lengthwise, thus preventing any danger from rear-end collisions. They are certainly a wonderful improvement over anything yet used for the purpose.

The first street cars in New York commenced running about 1832, and the line extended from Prince street, then the northernmost limits of the city, to Harlem Bridge. The cars were curiously shaped affairs, each having their compartments with side doors, somewhat like the English railway trains of to-day. They were balanced on leather springs, and the driver sat overhead with the brake at his feet. They were built by John Stephenson, whose shop in Twenty-eighth street is still pointed out.

From this extremely primitive venture has been evolved all that we now have in trolley, underground or elevated car-lines with which the city is gridironed in every direction.

THE SEDAN CHAIR. RAPID TRANSIT IN PRE-REVOLUTIONARY DAYS IN NEW YORK

surrounding neighborhood. As early as in the days of Queen Anne £500 was appropriated to open a road from Nyack to Sterling Iron Works, which was to be wide enough for two carriages with the overhanging boughs of the trees cut away. The second British Governor, Col. Francis Lovelace, in 1673 established a mail route between New York and Boston. This primitive undertaking was modest in the extreme, the service consisting of a single messenger, who, for the "more speedy intelligence and despatch of affairs," was ordered to make the round trip once each month with letters and packages. In 1729 came a fortnightly line of stages to Philadelphia, and in the same year a proposal was issued for a foot post to Albany along what is now Broadway. In 1793 the Boston route had grown from a single foot messenger to "small, genteel and easy stage carriages," which made the trip in between three and four days and ran thrice a week. The fare was four pence a mile. Time surely works great wonders, and truly the earth is shrinking.

Passing the days of the man and his horse, which may be called the first method of transit in Manhattan, we come to the sedan chair of romantic memory, and later on to the gorgeous private coaches of the officials and of some prominent private citizens, with their picturesque liveries and their dashing postillions. No public conveyances, however, were established till the beginning of the famous stage coach days. These vehicles went through many amazing changes, and increased in number so greatly that lower Broadway at times was made impassable by their huge and swaying forms. Long after these stages had finally passed in all other streets of the city, they still remained a picturesque and curious feature of Broadway life as late as 1884. They marked the first municipal effort to afford transportation to the citizens of New York, and performed a wonderful service in their day.

Meanwhile, the ever increasing demand for better facilities directed the attention of inquiring minds to the problem. As a result, New York gave to the world the idea of horse-cars on rails, an idea which has been of wonderful value to mankind in its convenience. Thirty years after they had been successfully operated in

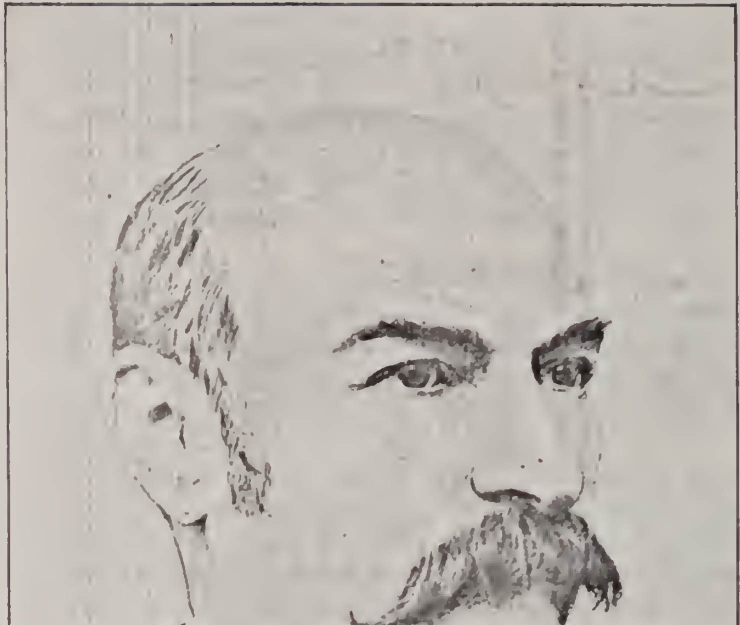
in 1625 was about eight souls. To-day, with its environments and included in its city government, that number has grown to almost half that many millions. In business hours and on special celebrations its denizens are nearly doubled.

The strange formation of the little island has caused no end of worry and trouble to the men whose business it is to move the people about the city. Manhattan is almost one solid rock. It is barely two miles wide at its widest part and not quite a mile at its narrowest.

The residence portion is in the north and the business part in the south. Consequently, everybody uptown has business downtown, and naturally they all begin and leave at about the same hour. The transportation problem during the "rush hour" therefore, is wholly different from that of any other large city, which can usually grow in all four directions.

In addition to this, the growth of population within recent years has been so rapid as to greatly complicate the problem. Many persons in New York still living can recall the time when Central Park was considered further out of the town proper than Bronx Park is to-day. Forty-second street, now one of the main arteries of travel, was the home of squatters, and goats roamed at will through the rocks and boulders in which the thoroughfare abounded. Bloomingdale, Yorkville and Harlem were villages to the north, and it took almost as long to reach them as it does to go to Albany now, for local transit in those days was very slow.

EARLY COLONIAL RAPID TRANSIT



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